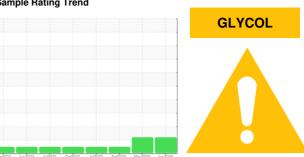


# **OIL ANALYSIS REPORT**

### Sample Rating Trend





Machine Id 920030 **Diesel Engine** 

PETRO CANADA DURON SHP 15W40 (--- GAL)

## **DIAGNOSIS**

#### Recommendation

We advise that you check for the source of the coolant leak. Check for low coolant level. Oil and filter change at the time of sampling has been noted. We recommend an early resample to monitor this condition.

#### Wear

All component wear rates are normal.

#### Contamination

Sodium and/or potassium levels remain high.

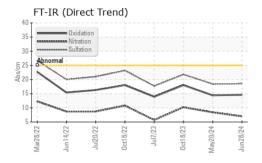
### ▲ Fluid Condition

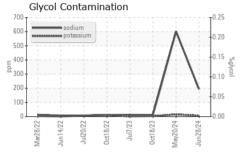
The BN result indicates that there is suitable alkalinity remaining in the oil.

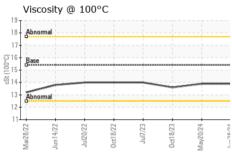
N SHP 15W40 (	··· ·,					
SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0125449	GFL0116143	GFL0092626
Sample Date		Client Info		28 Jun 2024	20 May 2024	18 Oct 2023
Machine Age	hrs	Client Info		32139	32022	31044
Oil Age	hrs	Client Info		117	598	576
Oil Changed		Client Info		Changed	Changed	Not Changd
Sample Status				ABNORMAL	ABNORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>120	6	9	21
Chromium	ppm	ASTM D5185m	>20	<1	0	<1
Nickel	ppm	ASTM D5185m	>5	<1	0	<1
Titanium	ppm	ASTM D5185m	>2	<1	0	0
Silver	ppm	ASTM D5185m	>2	<1	<1	0
Aluminum	ppm	ASTM D5185m	>20	3	2	5
Lead	ppm	ASTM D5185m	>40	2	8	2
Copper	ppm	ASTM D5185m	>330	7	12	2
Tin	ppm	ASTM D5185m	>15	<1	0	<1
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	ppm	ASTM D5185m		<1	0	0
ADDITIVES		method	limit/base	current	history1	history2
		mounoa		oarront	Thotory	
Boron	ppm	ASTM D5185m	0	11	23	0
	ppm ppm					
Boron		ASTM D5185m	0	11	23	0
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0	11 <1	23	0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	11 <1 71	23 0 85	0 0 62
Boron Barium Molybdenum Manganese	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	11 <1 71 <1	23 0 85 <1	0 0 62 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	11 <1 71 <1 890	23 0 85 <1 963	0 0 62 <1 1000
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	11 <1 71 <1 890 1044	23 0 85 <1 963 1085	0 0 62 <1 1000 1082
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	11 <1 71 <1 890 1044 1015	23 0 85 <1 963 1085 1132	0 0 62 <1 1000 1082 1087
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	11 <1 71 <1 890 1044 1015 1183	23 0 85 <1 963 1085 1132 1339	0 0 62 <1 1000 1082 1087 1343
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	11 <1 71 <1 890 1044 1015 1183 2789	23 0 85 <1 963 1085 1132 1339 3887	0 62 <1 1000 1082 1087 1343 3056
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	11 <1 71 <1 890 1044 1015 1183 2789 current	23 0 85 <1 963 1085 1132 1339 3887 history1	0 0 62 <1 1000 1082 1087 1343 3056
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	11 <1 71 <1 890 1044 1015 1183 2789  current	23 0 85 <1 963 1085 1132 1339 3887 history1 22	0 0 62 <1 1000 1082 1087 1343 3056 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 Iimit/base >25	11 <1 71 <1 890 1044 1015 1183 2789  current 11  ▲ 193	23 0 85 <1 963 1085 1132 1339 3887 history1 22	0 0 62 <1 1000 1082 1087 1343 3056 history2 24
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 Iimit/base >25	11 <1 71 <1 890 1044 1015 1183 2789	23 0 85 <1 963 1085 1132 1339 3887 history1 22 ▲ 601 15	0 0 62 <1 1000 1082 1087 1343 3056 history2 24 12
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	11 <1 71 <1 890 1044 1015 1183 2789  current 11  ▲ 193 6 NEG	23 0 85 <1 963 1085 1132 1339 3887 history1 22  601 15 NEG	0 0 62 <1 1000 1082 1087 1343 3056 history2 24 12 3 NEG
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m *ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D5185m *ASTM D5185m *ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20	11 <1 71 <1 890 1044 1015 1183 2789	23 0 85 <1 963 1085 1132 1339 3887 history1 22 ▲ 601 15 NEG history1	0 0 62 <1 1000 1082 1087 1343 3056 history2 24 12 3 NEG
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m *ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m *ASTM D5185m *ASTM D5185m *ASTM D5185m *ASTM D7844	0 0 60 0 1010 1150 1270 2060 limit/base >25 >20	11	23 0 85 <1 963 1085 1132 1339 3887 history1 22 ▲ 601 15 NEG history1 0.2	0 0 62 <1 1000 1082 1087 1343 3056 history2 24 12 3 NEG history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m *ASTM D7844 *ASTM D7624 *ASTM D76145	0 0 60 0 1010 1150 1270 2060 limit/base >25 >20 limit/base	11 <1 71 <1 890 1044 1015 1183 2789 current 11  193 6 NEG current 0.2 7.0	23 0 85 <1 963 1085 1132 1339 3887 history1 22 ▲ 601 15 NEG history1 0.2 8.4	0 0 62 <1 1000 1082 1087 1343 3056 history2 24 12 3 NEG history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m *ASTM D7844 *ASTM D7624 *ASTM D76145	0 0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20	11	23 0 85 <1 963 1085 1132 1339 3887 history1 22 ▲ 601 15 NEG history1 0.2 8.4 18.4	0 0 62 <1 1000 1082 1087 1343 3056 history2 24 12 3 NEG history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration Sulfation	ppm	ASTM D5185m *ASTM D5185m *ASTM D5185m *ASTM D5185m *ASTM D5185m *ASTM D5185m *ASTM D2982  method  *ASTM D7844 *ASTM D7624 *ASTM D7415  method	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >4 >20 >30 limit/base	11 <1 71 <1 890 1044 1015 1183 2789 current 11  193 6 NEG current 0.2 7.0 18.5 current	23 0 85 <1 963 1085 1132 1339 3887 history1 22 ▲ 601 15 NEG history1 0.2 8.4 18.4 history1	0 0 62 <1 1000 1082 1087 1343 3056 history2 24 12 3 NEG history2 0.9 10.2 21.8 history2

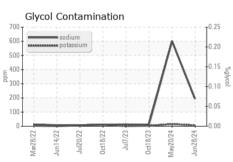


## **OIL ANALYSIS REPORT**





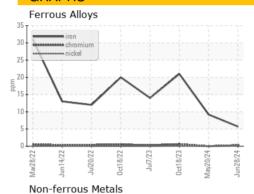


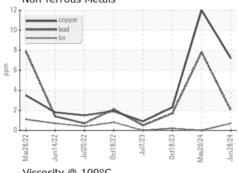


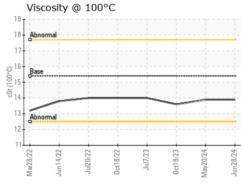
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
<b>Emulsified Water</b>	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG

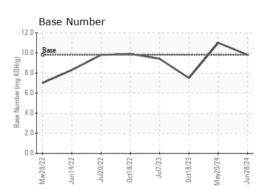
FLUID PHOPENTIES		memod	IIIIII/Dase	Current	HISTORY	HISTORYZ
Visc @ 100°C	cSt	ASTM D445	15.4	13.9	13.9	13.6

#### **GRAPHS**













Certificate 12367

Laboratory Sample No.

Lab Number : 06226073 Unique Number : 11109566

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : GFL0125449

\* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

Received **Tested** 

: 02 Jul 2024 : 05 Jul 2024 Diagnosed

: 05 Jul 2024 - Jonathan Hester

N7296 County Rd V Contact: Tim Kieffer

Test Package : FLEET ( Additional Tests: Glycol ) tim.kieffer@gflenv.com To discuss this sample report, contact Customer Service at 1-800-237-1369.

T: (608)219-0288 Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

GFL Environmental - 947 - WB Horicon HC

Report Id: GFL947 [WUSCAR] 06226073 (Generated: 07/09/2024 20:24:48) Rev: 1

Submitted By: See also GFL935 - Tim Kieffer

Horicon, WI US 53032